Newton’s Three Laws

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**Newton’s First Law**

Newton’s first law states that “An object in motion will remain in motion and an object at rest will remain at rest unless acted upon by an unbalanced force.”

-If an object is not moving it has no unbalanced forces acting on it.

-If an object is accelerating it is being acted upon by an unbalanced force. **Newton’s Second Law**

Newton’s second law states that “The acceleration of an object is directly proportional to the force and inversely proportional to the mass.”

It is represented by the equation , which can also be written as F=ma.

The unit for force is newton’s (N), the unit for acceleration is meters per second (m/s), and the unit for mass is grams (kg).

Example 1: If the mass of an object is 100kg and the acceleration is 5m/s, find the net force.

Using the equation F=ma, plug in 100 for mass and 5 for acceleration.

You get the equation F = 100•5, and then solve to get 500.

Because you are solving for force the unit is newton’s so your final answer is 500N.

**Newton’s Third Law**

Newton’s third law states that “for each action, there will be an equal and opposite reaction.”

It is represented by the equation F A on B = -F B on A

Example 2: If you pushing on a wall with a force of 200N, what force is the wall pushing on you with?

Using the equation F A on B = -F B on A, you plug in 200 for F A on B and can see that the wall pushes with a force of 200N, which is the same as you exert.

**Further Information**:

Newton’s laws information and practice

http://teachertech.rice.edu/Participants/louviere/Newton/

Newton’s laws review –

http://www.physicsclassroom.com/class/newtlaws/